

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

- 1 1. (Currently Amended) An integrated circuit, comprising:
 - 2 a lead frame having a plurality of leads;
 - 3 a current conductor portion comprising a coupling of at least two of the plurality of leads;
 - 4 a substrate having first and second opposing surfaces, the a first surface proximate to said
 - 5 current conductor portion and the a second surface distal from said current conductor portion;
 - 6 wherein said substrate is disposed having the first surface of said substrate above said current
 - 7 conductor portion and the second surface above the first surface when the leads are in electrical
 - 8 contact with an uppermost surface of a circuit board; and
 - 9 one or more magnetic field transducers disposed on the first surface of said substrate.
- 1 2. (Cancelled)
- 1 3. (Cancelled)
- 1 4. (Original) The integrated circuit of Claim 1, wherein said current conductor portion further
2 comprises a conductive clip coupled to the at least two of the plurality of leads.
- 1 5. (Original) The integrated circuit of Claim 4, wherein said substrate is disposed having the
2 first surface of said substrate above said conductive clip and the second surface of said substrate
3 above the first surface.
- 1 6. (Original) The integrated circuit of Claim 4, wherein said substrate is disposed having the
2 first surface of said substrate below said conductive clip and the second surface below the first
3 surface.

1 7. (Original) The integrated circuit of Claim 4, wherein a thickness of the conductive clip is
2 selected in accordance with a current passing through the conductive clip.

1 8. (Original) The integrated circuit of Claim 1, wherein said substrate has at least one bonding
2 pad coupled to a corresponding one of the plurality of leads with a bond wire.

1 9. (Original) The integrated circuit of Claim 1, wherein said substrate is associated with a
2 selected one of a solder ball, a gold bump, a eutectic and high lead solder bump, a no-lead solder
3 bump, a gold stud bump, a polymeric conductive bump, an anisotropic conductive paste, and a
4 conductive film coupled to a corresponding one of the plurality of leads.

1 10. (Original) The integrated circuit of Claim 1, wherein the current conductor portion has a
2 current conductor portion axis and at least two of said one or more magnetic field transducers are
3 disposed on opposite sides of the current conductor portion axis.

1 11. (Original) The integrated circuit of Claim 1, wherein at least two of said one or more
2 magnetic field transducers are rotated relative to each other for providing predetermined voltage
3 output polarities.

1 12. (Original) The integrated circuit of Claim 1, wherein at least a portion of said current
2 conductor portion has a T-shaped cross section.

1 13. (Original) The integrated circuit of Claim 1, wherein at least a portion of said current
2 conductor portion has a rectangular cross section having a minimum dimension less than a
3 thickness of said lead frame.

1 14. (Original) The integrated circuit of Claim 1, further comprising at least one amplifier
2 disposed on said substrate.

1 15. (Original) The integrated circuit of Claim 14, wherein the at least one amplifier provides an
2 output signal proportional to a sum of signals generated by at least two of said one or more
3 magnetic field transducers.

1 16. (Original) The integrated circuit of Claim 14, wherein the at least one amplifier forms a
2 summing arrangement coupled to four of said one or more magnetic field transducers.

1 17. (Original) The integrated circuit of Claim 1, further comprising a flux concentrator disposed
2 proximate said one or more magnetic field transducers.

1 18. (Original) The integrated circuit of Claim 1, further comprising a flux concentrating layer
2 disposed proximate the second surface of said substrate.

1 19. (Original) A method of manufacturing an integrated circuit, comprising:
2 providing a lead frame having a plurality of leads of which at least two are coupled
3 together to form a current conductor portion; and
4 etching the current conductor portion to provide the current conductor portion with a
5 cross section having a predetermined shape selected to provide an increased flux density.

1 20. (Original) The method of Claim 19, wherein the predetermined shape comprises a T shape.

1 21. (Original) The method of Claim 19, wherein the predetermined shape comprises a
2 rectangular shape having a minimum dimension less than a thickness of said lead frame.

1 22. (Original) The method of Claim 19, further comprising:
2 mounting a substrate proximate said lead frame, the substrate having a first surface
3 proximate to the current conductor portion and a second opposing surface disposed distal from
4 the current conductor portion, wherein one or more magnetic field transducers are disposed on
5 the first surface of the substrate.

1 23. (Original) The method of Claim 22, wherein the predetermined shape comprises a T shape.

1 24. (Original) The method of Claim 22, wherein the predetermined shape comprises a
2 rectangular shape having a minimum dimension less than a thickness of said lead frame.

1 25. (New) An integrated circuit, comprising:
2 a lead frame having a plurality of leads;
3 a current conductor portion comprising a coupling of at least two of the plurality of leads,
4 at least a portion of the current conductor portion having a cross section with a predetermined
5 shape selected to provide an increased flux density;
6 a substrate having first and second opposing surfaces, the first surface proximate to said
7 current conductor portion and the second surface distal from said current conductor portion; and
8 one or more magnetic field transducers disposed on the first surface of said substrate.

1 26. (New) The integrated circuit of Claim 25, wherein the cross section is generally T-
2 shaped.

1 27. (New) The integrated circuit of Claim 25, wherein the cross section is generally
2 rectangular having a smallest dimension less than a thickness of said lead frame.

1 28. (New) The integrated circuit of Claim 25, wherein said substrate is disposed having the
2 first surface of said substrate above said current conductor portion and the second surface above
3 the first surface when the leads are in electrical contact with an uppermost surface of a circuit
4 board.

1 29. (New) An integrated circuit, comprising:
2 a lead frame having a plurality of leads;
3 a current conductor portion comprising a coupling of at least two of the plurality of leads,
4 wherein the current conductor portion comprises a loop having an inner dimension;
5 a substrate having first and second opposing surfaces, the first surface proximate to said
6 current conductor portion and the second surface distal from said current conductor portion; and
7 one or more magnetic field transducers disposed on the first surface of said substrate.

1 30. (New) The integrated circuit of Claim 29, wherein at least one of the one or more
2 magnetic field transducers is disposed within the inner dimension.

1 31. (New) The integrated circuit of Claim 29, wherein at least a portion of said current
2 conductor portion has a generally T-shaped cross section.

1 32. (New) The integrated circuit of Claim 29, wherein at least a portion of said current
2 conductor portion has a generally rectangular cross section having a smallest dimension less than
3 a thickness of said lead frame.

1 33. (New) The integrated circuit of Claim 29, wherein said substrate is disposed having the
2 first surface of said substrate above said current conductor portion and the second surface above
3 the first surface when the leads are in electrical contact with an uppermost surface of a circuit
4 board.

1 34. (New) A method of manufacturing an integrated circuit, comprising:
2 providing a lead frame having a plurality of leads of which at least two are coupled
3 together to form a current conductor portion;
4 providing a substrate having first and second opposing surfaces and at least one bonding
5 pad disposed on the first surface;
6 providing one or more magnetic field transducers disposed on the first surface of the
7 substrate; and
8 mounting the substrate to the lead frame so that the first surface of said substrate is above
9 said current conductor portion and the second surface is above the first surface when the leads
10 are in electrical contact with an uppermost surface of a circuit board, wherein the one or more
11 magnetic field transducers are proximate to the current conductor portion.

1 35. (New) The method of Claim 34, wherein said mounting comprises coupling the at least
2 one bonding pad to a corresponding one of the plurality of leads with a selected one of a solder
3 ball, a gold bump, a eutectic and high lead solder bump, a no-lead solder bump, a gold stud
4 bump, a polymeric conductive bump, an anisotropic conductive paste, and a conductive film.